43. (New) The isolated DNA sequence of claim 42 wherein the mitogenic agent is sucrose or cytokinin.

44. (New) The isolated DNA sequence of any of claims 1, 42 or 43 which encodes a D-type cyclin.

45. (New) The vector of claim 6 or 7 wherein the DNA sequence encoding a cyclin is inducible by mitogenic agents.

46. (New) The vector of claim 45 wherein the cyclin is a D-type cyclin.

47. (New) The method of any one of claims 2, 38, 39, 40, or 41 wherein the cyclin encodes a D-type cyclin.

REMARKS

In response to the final Office Action of November 19, 2002, Applicants have amended the claims, which when considered with the following remarks, is deemed to place the present application in condition for allowance. In addition, Applicants have added claims 42-47 which further define the present invention and recite subject matter to which Applicants are entitled. Favorable consideration of all pending claims is respectfully requested.

In the first instance, Applicants through the undersigned, thank Examiners Collins and Bui for helpful suggestions made during the course of a telephone interview on March 17, 2003. The Examiners indicated that the presently amended claims and the remarks hereinbelow would be favorably considered.

In the Office Action of November 19, 2002, claims 1-4, 6-8, 10, and 27 remain rejected and claims 30-41 were newly rejected under 35 U.S.C.§ 112, first paragraph, as allegedly violative of the written description requirement. In response to the rejection and in order to advance prosecution of this application, Claims 1 and 39 have been amended so that they no

longer recite a nucleic acid sequences which encode a protein having at least 70% sequence identity to the amino acid sequence encoded by the DNA sequence of element (a) or (b). In addition, Claims 1 and 39 have been amended to recite specific hybridization conditions. Support for the hybridization conditions may be found throughout the specification e.g., page 7. Applicants respectfully request withdrawal of the rejection of claims 1-4, 6-8, 10 and 27 under 35 U.S.C. § 112, first paragraph.

Claims 2, 3, 10, and 38 remain rejected and claims 38-41 are newly rejected under 35 U.S.C. § 112, first paragraph, as allegedly directed to non-enabled subject matter. In response to the rejection and in order to advance prosecution of this application, claim 1 has been amended so that it no longer recites DNA sequences encoding an amino acid sequence having at least 70% identity to the sequences recited in elements (a) or (b). Withdrawal of the rejection of claims 2, 3, 10, and 38 under 35 U.S.C.§ 112, first paragraph is respectfully requested.

With respect to both the written description and enablement rejections under 35 U.S.C.§ 112, first paragraph, the Examiner's position is that Applicants have not demonstrated that SEQ ID NO:1 encodes a protein that activates a cyclin dependent kinase. *See* Office Action, page 3, first full paragraph, last line and page 11, last paragraph to page 12, first paragraph.

In response to the assertion that Applicants have not demonstrated that SEQ ID NO:1 encodes a protein that activates a cyclin dependent kinase, Applicants respectfully submit that data is presently being generated related to protein activity. As soon as Applicants are in possession of the additional data to further support the cyclin function of the protein encoded by SEQ ID NO:1, such data will be submitted in the form of a declaration under 37 C.F.R. § 1.132.

Claims 1, 4, and 10 remain rejected and claims 38-41 are newly rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite in the recitation of "mitogenic cyclin". In

response to this rejection, and in order to advance prosecution of this application, claim 1 no longer recites "mitogenic cyclin." Claim 4 has been amended to recite in relevant part: "an isolated DNA sequence encoding a cyclin and inducible by a mitogenic agent." Claim 10 has been amended to recite in relevant part: "a method for the production of a cyclin encoded by a gene inducible by a mitogenic agent". Support for recitation of "inducible by a mitogenic agent" may be found throughout the specification, e.g., page 4, penultimate paragraph; page 36, last sentence. Withdrawal of the rejection of claims 1, 4, and 10 under 35 U.S.C. § 112, second paragraph, is therefore warranted.

Claim 1 has been rejected under 35 U.S.C. 112, second paragraph, as allegedly indefinite in reciting "hybridizing under stringent conditions." As suggested by the Examiner, claims 1 and 39 have been amended to recite stringent hybridization conditions. Support for the hybridization conditions may be found throughout the specification, e.g., page 7. Claims 32-35 have also been rejected under 35 U.S.C. 112, second paragraph, as allegedly indefinite in the recitation of "a" before "vector" and "DNA sequence." As suggested by the Examiner, Claims 32-35 have been amended to recite "the" rather than "a" before "vector" and "DNA sequence."

Claims 38-39 have been rejected under 35 U.S.C. 112, second paragraph, as allegedly indefinite it the recitation of "modulating." Applicants respectfully traverse the rejection of claims 38-39 under the second paragraph of section 112, for the following reasons. Applicants submit that the term "modulation" should be interpreted as having its ordinary, dictionary meaning: to adjust or to regulate. Page 20, lines 16-19 provide: "an example is that DNA synthesis or progression of DNA replication will be negatively influenced by interfering with the formation of a cyclin-dependent kinase complex. Alternatively, overexpression of the mitogen cyclin accelerates reentry into the cell cycle." Further, page 21, lines 13-17 disclose: "overexpression of a cyclin

gene according to the invention promotes cell proliferation, while reducing cyclin expression arrests cell division or prevents reentry into the cell cycle. Part of the invention is thus the usage of a cyclin comprising the coding sequence or part thereof as mentioned hereinabove as a negative or positive regulator of cell proliferation." Withdrawal of the rejection of claims 38-39 under 35 U.S.C.§ 112, second paragraph, is therefore respectfully requested.

Claims 1, 6-8, 10, and 27 remain rejected and claims 30-41 are newly rejected under 35 U.S.C.§101 as allegedly not supported by either a specific asserted utility or a well established utility. The same claims are rejected under 35 U.S.C.§ 112, first paragraph, as allegedly directed to subject mater which one skilled in the art would not know how to use, since the specification allegedly provides no specific asserted utility or a well established utility. Essentially, it is the Examiner's position that the invention lacks utility in the absence of evidence sufficient to establish that the claimed insolated nucleic acids encode a protein having a cyclin function, i.e., able to activate a cyclin dependent kinase. As stated above, Applicants are presently generating data related to function of the claimed cyclin which provides further support to the utility requirement of section 101 and "how to use" provision of section 112. Once the data is available, Applicants will provide such data forthwith.

In view of the amended claims, remarks hereinabove, and data to be submitted which further supports the written description, enablement and "how to use" provision of section

112, as well as the utility requirement of section 101, the present application is deemed to be in condition for allowance, which action is earnestly solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Twice Amended) An isolated DNA sequence [encoding a mitogenic cyclin or encoding an immunologically active and/or functional fragment thereof having mitogenic cyclin activity] selected from the group consisting of:

(a) DNA sequences comprising a nucleotide sequence encoding a protein comprising the amino acid sequence as given in SEQ ID NO:2;

(b) DNA sequences comprising a nucleotide sequence as given in SEQ ID NO:1;

(c) DNA sequences hybridizing under stringent hybridization conditions with the complementary strand of a DNA sequence as defined in (a) or (b);

wherein said stringent hybridization conditions comprise 4X SSC at 65° C or 50% formamide, 4X SSC at 42° C, followed by washing in 0.1X SSC at 65° C for one hour

[(d) DNA sequences encoding an amino acid sequence which has at least 70% sequence identity to the amino acid sequence encoded by the DNA sequence of (a) or (b);

(e) DNA sequences, comprising a nucleotide sequence as defined in any one of (a) to (d) wherein the nucleotide sequence is degenerated as a result of the genetic code ; and

(f) DNA sequences encoding a fragment of a protein encoded by a DNA sequence of any one of (a) to (e)].

2. (Twice Amended) A method for identifying and obtaining a [mitogenic cyclins] cyclin or a nucleic acid molecule encoding a cyclin wherein said nucleic acid molecule encoding said cyclin is inducible by a mitogenic agent, [comprising a] said method comprising performing a two-hybrid screening assay wherein CDC2a is expressed as a bait and a cDNA from a cDNA

library of a plant cell suspension is expressed as prey [are used and wherein said mitogenic cyclins identified as interacting with CDC2a are obtained] in a cell;

incubating the cell under conditions wherein the cell grows or survives or has enhanced growth or survival when the expressed CDC2a binds a protein encoded by a cDNA from a cDNA library;

selecting the growing or surviving cell and isolating the cyclin or nucleic acid molecule encoding the cyclin from the growing or surviving cell.

4. (Twice Amended) An isolated DNA sequence encoding a [mitogenic] cyclin and inducible by a mitogenic agent obtainable by the method of claim 2 or 3.

10. (Twice Amended) A method for the production of a [mitogenic] cyclin encoded by a gene inducible by a mitogenic agent [or an immunologically active or functional fragment thereof having mitogenic cyclin activity] comprising culturing a host cell of any of claims 8, 32 or 34 under conditions allowing the expression of the protein and recovering the produced protein from the culture.

27. (Twice Amended) A diagnostic composition comprising [a]the DNA sequence of claim 1, and optionally suitable means for detection of said DNA sequence wherein the means for detection is a probe.

32. (Amended) A host cell comprising [a] the vector of claim 6.

33. (Amended) A host cell comprising [a] the vector of claim 30.

34. (Amended) A host cell comprising [a] the DNA sequence of claim 1.

35. (Amended) A host cell comprising [a] the DNA sequence of claim 4.

38. (Amended) A method for modulating plant cell cycle, plant cell division or growth which comprises modulating the level or activity of a [mitogenic] cyclin that binds CDC2a in a plant cell wherein said [mitogenic] cyclin comprises the sequence set forth in SEQ ID NO:2 [or a sequence having at least 70% sequence identity thereto].

39. (Amended) A method for modulating plant cell cycle, plant cell division or growth which comprises modulating the level or activity of a [mitogenic] cyclin that binds CDC2a in a plant cell wherein said [mitogenic] cyclin is encoded by:

(a) DNA sequences comprising a nucleotide sequence encoding a protein comprising the amino acid sequence as given in SEQ ID NO:2,

(b) DNA sequences comprising a nucleotide sequence as given in SEQ ID NO:1,

(c) DNA sequences hybridizing under stringent hybridization conditions with the complementary strand of a DNA sequence as defined in (a) or (b) wherein said stringent hybridization conditions comprise 4X SSC at 65° C or 50% formamide, 4X SSC at 42° C, followed by washing in 0.1X SSC at 65° C for one hour ;

[(d) DNA sequences encoding an amino acid sequence which has at least 70% sequence identity to the amino acid sequence encoded by the DNA sequence of (a) or (b);

(e) DNA sequences, comprising a nucleotide sequence as defined in any one of (a) to (d) wherein the nucleotide sequence is degenerated as a result of the genetic code ; or

(f) DNA sequences encoding a fragment of a protein encoded by a DNA sequence of any one of (a) to (e)].

40. (Amended) The method of claim 39 wherein modulating the level or activity of the [mitogenic] cyclin <u>that binds CDC2a</u> is achieved by overexpressing one or more of said DNA sequences in a plant cell.

41. (Amended) The method of claim 39 wherein modulating the level or activity of the [mitogenic] cyclin <u>that binds CDC2a</u> is achieved by reducing expression by one or more said DNA sequences in a plant cell.

Claims 42-47 are newly added.